

**REMARKS**

Claims 1-11 are all the claims pending in the application.

**I. The Objections to the Claims**

Claims 4, 5 and 7 are objected to allegedly as containing "informalities."

The Examiner states that the substituent groups for formulae (II), (III), (IV), (V) and (VI) are not consistent. In particular, the Examiner states that the numbers used in association with n, m and p are superscripts in text, but are not subscripts in the formulae themselves.

Applicants have amended the claims and the specification, formulae (II), (III), (IV), (V) and (VI), to change the terms  $n_1$ ,  $n_2$ ,  $p_1$ ,  $p_2$ ,  $p_3$ ,  $m_1$ , etc. in the formulae to  $n^1$ ,  $n^2$ ,  $p^1$ ,  $p^2$ ,  $p^3$ ,  $m^1$ , etc.

For the above reasons, it is respectfully submitted that Applicants' claims are clear and definite and it is requested that the objection to the claims be reconsidered and withdrawn.

**II. The Rejection Under 35 U.S.C. §112**

Claims 1-4 and 9-11 are rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite.

The Examiner states that the language "at least two sensitizing dyes represented by the formula (I)" in claims 1 and 11 is unclear "since there is only one

dye of formula represented by formula (I) is shown in the claims, and none of the other dyes presented in the claims."

Applicants respectfully submit that the present claims are clear and definite as written and that they particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants request that the Examiner reconsider and withdraw the rejection under 35 U.S.C. §112, second paragraph, in view of the following remarks.

The claim language clearly recites that two sensitizing dyes are being claimed. The two dyes having the same general formula does not make it unclear that two dyes are being claimed (i.e., two different dyes, each within the scope of general formulae (I)).

However, for further clarification, claims 1 and 11 have been amended to recite "at least two different sensitizing dyes represented by the following formula (I)." Again, the two dyes having the same general formula does not make it unclear that two different dyes are being claimed

For the above reasons, it is respectfully submitted that Applicants' claims are clear and definite and it is requested that the rejection under 35 U.S.C. §112 be reconsidered and withdrawn.

**III. The Rejection Based on Miyamoto and Hioki**

Claims 1-11 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over the combination of Miyamoto et al (Miyamoto) and Hioki et al (Hioki).

The Examiner states that Miyamoto discloses silver halide emulsion containing dyes within the scope of the claimed invention. The Examiner particularly notes that the abstract states that "the silver emulsion is subjected to spectral sensitization with at least one type of methine compound represented by formula (I)".

The Examiner states that Miyamoto discloses dyes having a "-SO<sub>3</sub>-" substituent and other substituents containing a dissociable group other than a "-SO<sub>3</sub>-" containing substituent. The Examiner also states that formula (I) allows for "(X<sub>1</sub>)<sub>k</sub>" to represent an anion and k to represent a number required to adjust the charge in the molecule to 0.

The Examiner states Hioki teaches that sulfo groups may be described as "-SO<sub>3</sub>-" and also as "-SO<sub>3</sub>-H", when a hydrogen ion is presented as a counter ion.

The Examiner states that the difference between the claimed invention and that of Miyamoto is the "H" associated with the sulfo group (Miyamoto being silent with respect to the use of hydrogen atom to balance the charge of the dye molecule, but Hioki disclosing that "H" can be used to balance the charge of dye molecule containing sulfo group). The Examiner concludes that it would have been obvious to

the worker of ordinary skill in the art at the time the invention was made to use positively charged hydrogen to adjust the charge in the molecule of the dye taught in Miyamoto, and thereby provide an invention as claimed.

Applicants respectfully submit that the present invention is not anticipated by or obvious over Miyamoto and Hioki and request that the Examiner reconsider and withdraw this rejection in view of the following remarks.

Applicants' respectfully submit that Miyamoto does not teach or disclose the use of two types of dyes, both within the scope of formula (I) together in a silver halide emulsion. Likewise, Hioki does not teach or disclose the use of two types of dyes, both within the scope of formula (I) together in a silver halide emulsion. Moreover, even if the cited references are combined Applicants' invention would not be obtained. Therefore, it is respectfully submitted that the Examiner has not established a *prima facie* case of obviousness in view of the disclosures of Miyamoto and Hioki.

While, as set forth above, it is believed the Examiner has not established a *prima facie* case of obviousness, to advance the prosecution of the case, Applicants have provided additional declaration evidence showing the improved properties of the presently claimed silver halide photographic emulsion composition over the materials of the references of the rejection. See the attached Declaration Under 37

C.F.R. § 1.132 by Mr. Tetsuo Nakamura. The §132 Declaration is unexecuted. The executed copy will be filed as soon as it is received from the Declarant.

The comparative data of the §132 Declaration demonstrates that the unexpected effects achieved by the present invention (i.e., compatibility of the high sensitivity and reduction of residual color) are obtained by the combination of at least two different sensitizing dyes according to the present invention and are not obtained by the use of only one sensitizing dye, as disclosed in the references cited.

Example 2 of the §132 Declaration is comparative experimentation including dyes disclosed in Miyamoto. Thus, Example 2 is representative of the closest cited art, Miyamoto.

Example 3 of the §132 Declaration is comparative experimentation including dyes disclosed in Hioki. Thus, Example 2 is representative of the closest cited art, Hioki.

It is clearly seen from the results of the §132 Declaration, when the two different sensitizing dyes of the present invention are used in combination, both the sensitivity and the reduction in residual color are unexpectedly improved. Such improvements in sensitivity and residual color are not expected in view of the teachings of Miyamoto and Hioki, which contain no discussion as to the excellent effect achieved by the combination two different sensitizing dyes according to the present invention.

For the above reasons, it is respectfully submitted that the subject matter of claims 1-11 is neither taught by nor made obvious from the disclosures of Miyamoto and Hioki and it is requested that the rejection under 35 U.S.C. §103(a) be reconsidered and withdrawn.

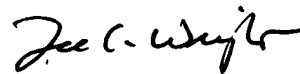
**IV. Conclusion**

In view of the above, Applicants respectfully submit that their claimed invention is allowable and ask that the objection to the claims, the rejection under 35 U.S.C. §112 and the rejection under 35 U.S.C. §103 be reconsidered and withdrawn. Applicants respectfully submit that this case is in condition for allowance and allowance is respectfully solicited.

If any points remain at issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the local exchange number listed below.

Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case, and any required fee for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,



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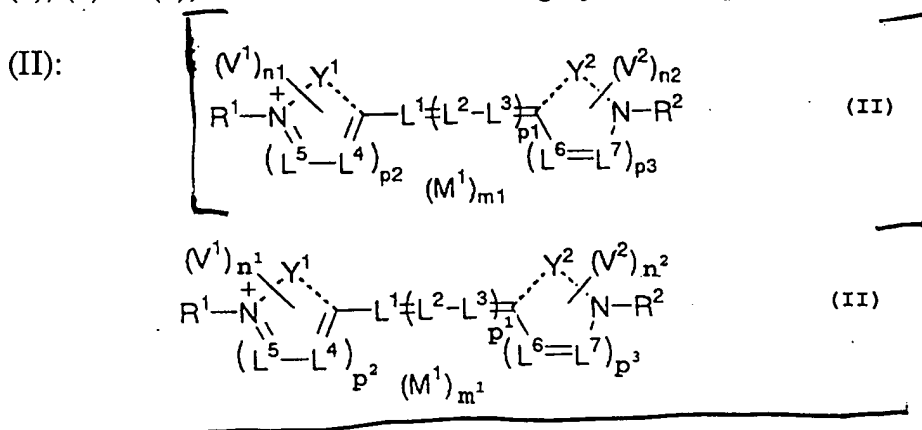
APPENDIX  
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

Please delete the third paragraph on page 4, ending on page 5, and replace with:

(4) The silver halide photographic emulsion as described in the above item (1), (2) or (3), wherein the sensitizing dyes are represented by the following formula

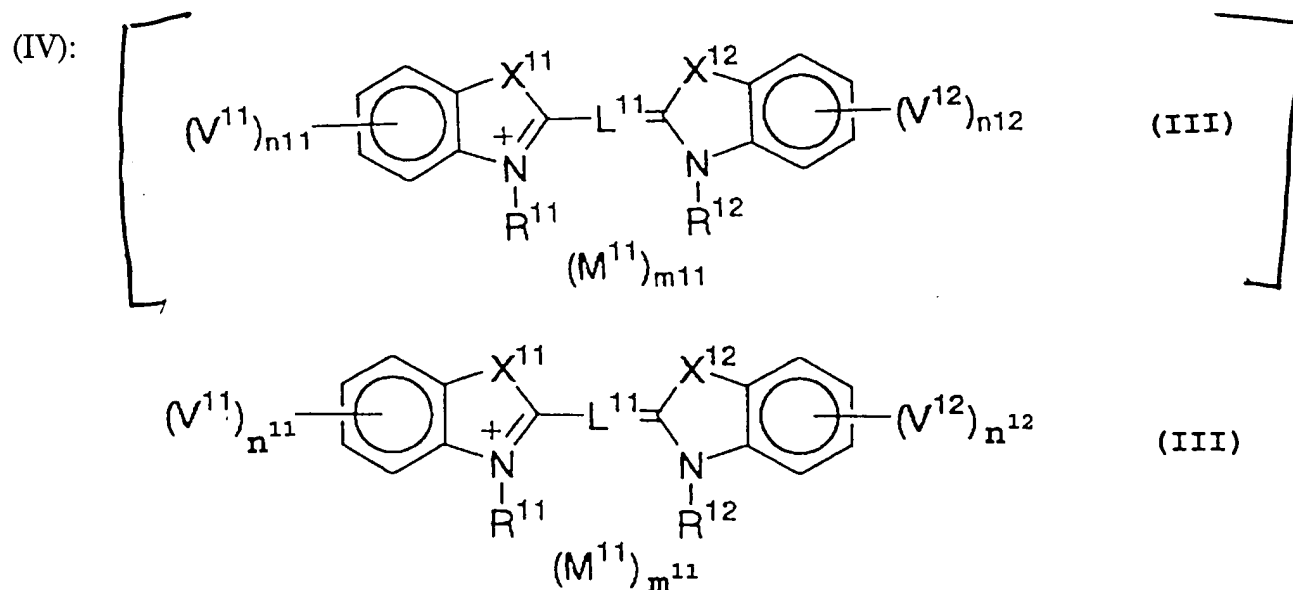


wherein R<sup>1</sup> and R<sup>2</sup> each represents a substituted alkyl, aryl or heterocyclic group, and R<sup>1</sup> is substituted with -SO<sub>3</sub>H and R<sup>2</sup> is substituted with a dissociable group other than -SO<sub>3</sub>H; Y<sup>1</sup> and Y<sup>2</sup> each represents an atomic group necessary to form a 5- or 6-membered nitrogen-containing heterocyclic ring, and Y<sup>1</sup> and Y<sup>2</sup> may be condensed with other carbocyclic ring or heterocyclic ring; V<sup>1</sup> and V<sup>2</sup> each represents a substituent; n<sup>1</sup> and n<sup>2</sup> each represents an integer of 0 or more (preferably 6 or less, more preferably 2 or less), and when n<sup>1</sup> and n<sup>2</sup> each represents

2 or more,  $V^1$  and  $V^2$  may be the same with or different from each other;  $L^1$ ,  $L^2$ ,  $L^3$ ,  $L^4$ ,  $L^5$ ,  $L^6$  and  $L^7$  each represents a methine group;  $p^1$  represents 0, 1, 2 or 3,  $p^2$  and  $p^3$  each represents 0 or 1, and when  $p^1$  represents 2 or 3, repeating  $L^2$  and  $L^3$  may be the same with or different from each other;  $M^1$  represents a counter ion; and  $m^1$  represents a number of 0 or more necessary to neutralize the electric charge in the molecule.

Please delete the paragraph starting on page 5, line 17, ending on page 7, and replace with:

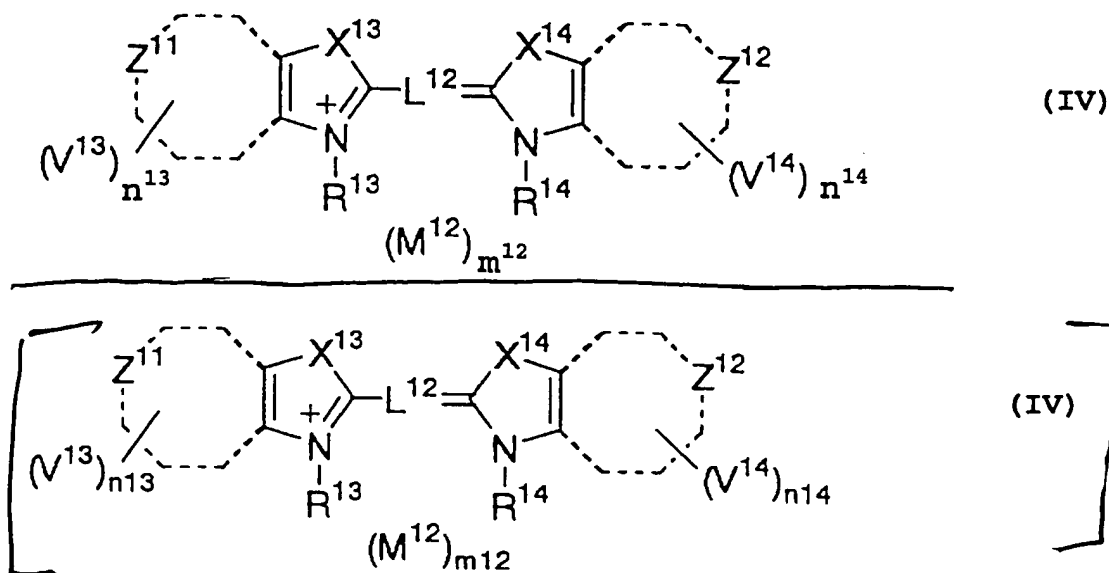
(5) The silver halide photographic emulsion as described in the above item (1), (2), (3) or (4), wherein at least one sensitizing dye is represented by the following formula (III) and at least one sensitizing dye is represented by formula



wherein  $R^{11}$  and  $R^{12}$  each represents a substituted alkyl, aryl or heterocyclic group, and  $R^{11}$  is substituted with  $-SO_3H$  and  $R^{12}$  is substituted with a dissociable group



other than  $-\text{SO}_3\text{H}$ ;  $\text{X}^{11}$  and  $\text{X}^{12}$  each represents an oxygen atom, a sulfur atom, a selenium atom,  $\text{NR}^{15}$ ,  $\text{CR}^{16}\text{R}^{17}$ , or  $\text{L}^{13}=\text{L}^{14}$ ;  $\text{R}^{15}$ ,  $\text{R}^{16}$  and  $\text{R}^{17}$  each represents a substituted or unsubstituted alkyl, aryl or heterocyclic group;  $\text{L}^{13}$  and  $\text{L}^{14}$  each represents a methine group;  $\text{V}^{11}$  and  $\text{V}^{12}$  each represents a substituent;  $n^{11}$  and  $n^{12}$  each represents an integer of 0 or more (preferably 4 or less, more preferably 2 or less), and when  $n^{11}$  and  $n^{12}$  each represents 2 or more,  $\text{V}^{11}$  and  $\text{V}^{12}$  may be the same with or different from each other;  $\text{L}^{11}$  represents a methine group;  $\text{M}^{11}$  represents a counter ion; and  $m^{11}$  represents a number of 0 or more necessary to neutralize the electric charge in the molecule;



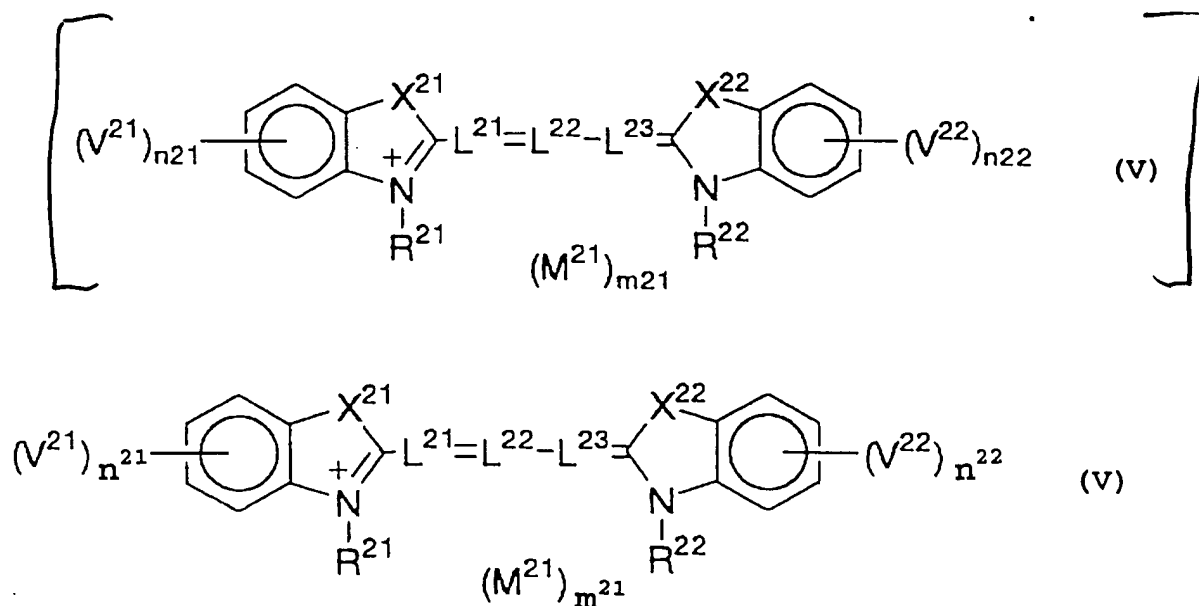
wherein  $\text{R}^{13}$  and  $\text{R}^{14}$  each represents a substituted alkyl, aryl or heterocyclic group, and at least one of  $\text{R}^{13}$  and  $\text{R}^{14}$  is substituted with  $-\text{SO}_3\text{H}$  and the other is substituted with a dissociable group other than  $-\text{SO}_3\text{H}$ ;  $\text{X}^{13}$  and  $\text{X}^{14}$  each represents an oxygen atom, a sulfur atom, a selenium atom,  $\text{NR}^{18}$ ,  $\text{CR}^{19}\text{R}^{20}$ , or  $\text{L}^{15}=\text{L}^{16}$ ;  $\text{R}^{18}$ ,  $\text{R}^{19}$  and  $\text{R}^{20}$  each represents a substituted or unsubstituted alkyl, aryl or heterocyclic group;  $\text{L}^{15}$  and  $\text{L}^{16}$  each represents a methine group;  $\text{Z}^{11}$  represents a benzene ring

or a naphthalene ring;  $Z^{12}$  represents a naphthalene ring;  $V^{13}$  and  $V^{14}$  each represents a substituent;  $n^{13}$  and  $n^{14}$  each represents an integer of 0 or more ( $n^{13}$  represents preferably 4 or less, more preferably 2 or less, and  $n^{14}$  represents preferably 6 or less, more preferably 2 or less), and when  $n^{13}$  and  $n^{14}$  each represents 2 or more,  $V^{13}$  and  $V^{14}$  may be the same with or different from each other;  $L^{12}$  represents a methine group;  $M^{12}$  represents a counter ion; and  $m^{12}$  represents a number of 0 or more necessary to neutralize the electric charge in the molecule.

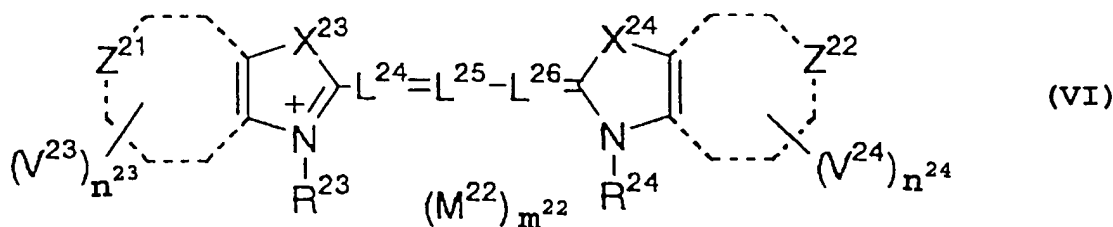
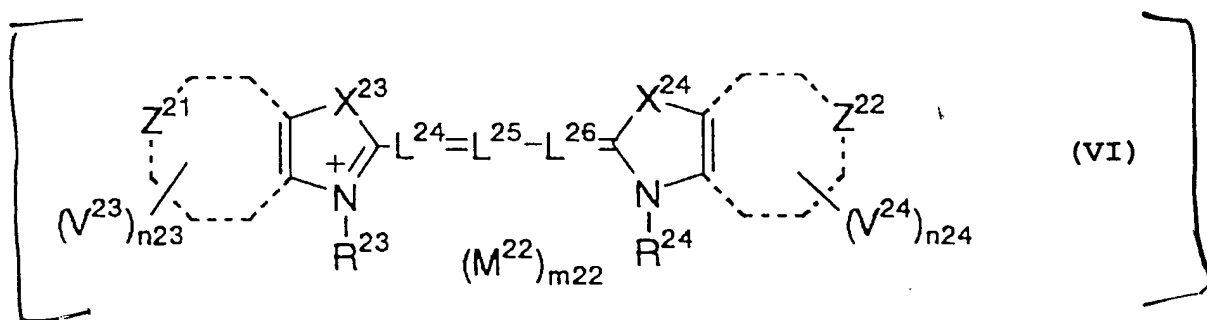
**Please delete the second paragraph on page 8, ending on page 10, and replace with:**

(7) The silver halide photographic emulsion as described in the above item (1), (2), (3) or (4), wherein at least one sensitizing dye is represented by the following formula (V) and at least one sensitizing dye is represented by formula

(VI):



wherein  $R^{21}$  and  $R^{22}$  each represents a substituted alkyl, aryl or heterocyclic group, and at least one of  $R^{21}$  and  $R^{22}$  is substituted with  $-SO_3H$  and the other is substituted with a dissociable group other than  $-SO_3H$ ;  $X^{21}$  and  $X^{22}$  each represents an oxygen atom, a sulfur atom, a selenium atom,  $NR^{25}$ ,  $CR^{26}R^{27}$ , or  $L^{27}=L^{28}$ ;  $R^{25}$ ,  $R^{26}$  and  $R^{27}$  each represents a substituted or unsubstituted alkyl, aryl or heterocyclic group;  $L^{27}$  and  $L^{28}$  each represents a methine group;  $V^{21}$  and  $V^{22}$  each represents a substituent;  $n^{21}$  and  $n^{22}$  each represents an integer of 0 or more (preferably 4 or less, more preferably 2 or less), and when  $n^{21}$  and  $n^{22}$  each represents 2 or more,  $V^{21}$  and  $V^{22}$  may be the same with or different from each other;  $L^{21}$ ,  $L^{22}$  and  $L^{23}$  each represents a methine group;  $M^{21}$  represents a counter ion; and  $m^{21}$  represents a number of 0 or more necessary to neutralize the electric charge in the molecule;



wherein  $R^{23}$  and  $R^{24}$  each represents a substituted alkyl, aryl or heterocyclic group, and at least one of  $R^{23}$  and  $R^{24}$  is substituted with  $-SO_3H$  and the other is

substituted with a dissociable group other than  $\text{-SO}_3\text{H}$ ;  $\text{X}^{23}$  and  $\text{X}^{24}$  each represents an oxygen atom, a sulfur atom, a selenium atom,  $\text{NR}^{28}$ ,  $\text{CR}^{29}\text{R}^{30}$ , or  $\text{L}^{29}=\text{L}^{30}$ ;  $\text{R}^{28}$ ,  $\text{R}^{29}$  and  $\text{R}^{30}$  each represents a substituted or unsubstituted alkyl, aryl or heterocyclic group;  $\text{L}^{29}$  and  $\text{L}^{30}$  each represents a methine group;  $\text{Z}^{21}$  represents a benzene ring or a naphthalene ring;  $\text{Z}^{22}$  represents a naphthalene ring;  $\text{V}^{23}$  and  $\text{V}^{24}$  each represents a substituent;  $\text{n}^{23}$  and  $\text{n}^{24}$  each represents an integer of 0 or more (when  $\text{Z}^{21}$  represents a benzene ring,  $\text{n}^{23}$  represents 4 or less, preferably 2 or less, and when  $\text{Z}^{21}$  represents a naphthalene ring,  $\text{n}^{23}$  represents 6 or less, preferably 2 or less, and  $\text{n}^{24}$  represents 6 or less, preferably 2 or less), and when  $\text{n}^{23}$  and  $\text{n}^{24}$  each represents 2 or more,  $\text{V}^{23}$  and  $\text{V}^{24}$  may be the same with or different from each other;  $\text{L}^{24}$ ,  $\text{L}^{25}$  and  $\text{L}^{26}$  each represents a methine group;  $\text{M}^{22}$  represents a counter ion; and  $\text{m}^{22}$  represents a number of 0 or more necessary to neutralize the electric charge in the molecule.

IN THE CLAIMS:

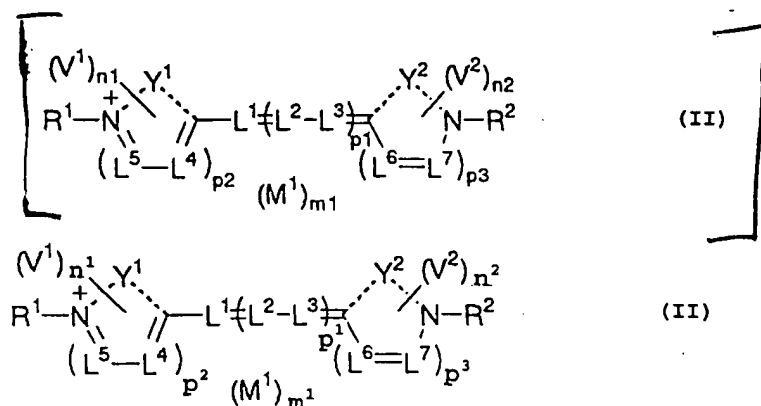
**The claims are amended as follows:**

1 (amended). A silver halide photographic emulsion which contains at least two different sensitizing dyes represented by the following formula (I):



wherein Dye represents a dye moiety; A represents a linking group; Q represents a dissociable group; r represents 0 or 1; q represents an integer of 2 or more, provided that at least one Q represents -SO<sub>3</sub>H and at least one Q represents a dissociable group other than -SO<sub>3</sub>H; M represents a counter ion; and m represents a number of 0 or more necessary to neutralize the electric charge in the molecule, and when m represents 2 or more, M's need not be the same.

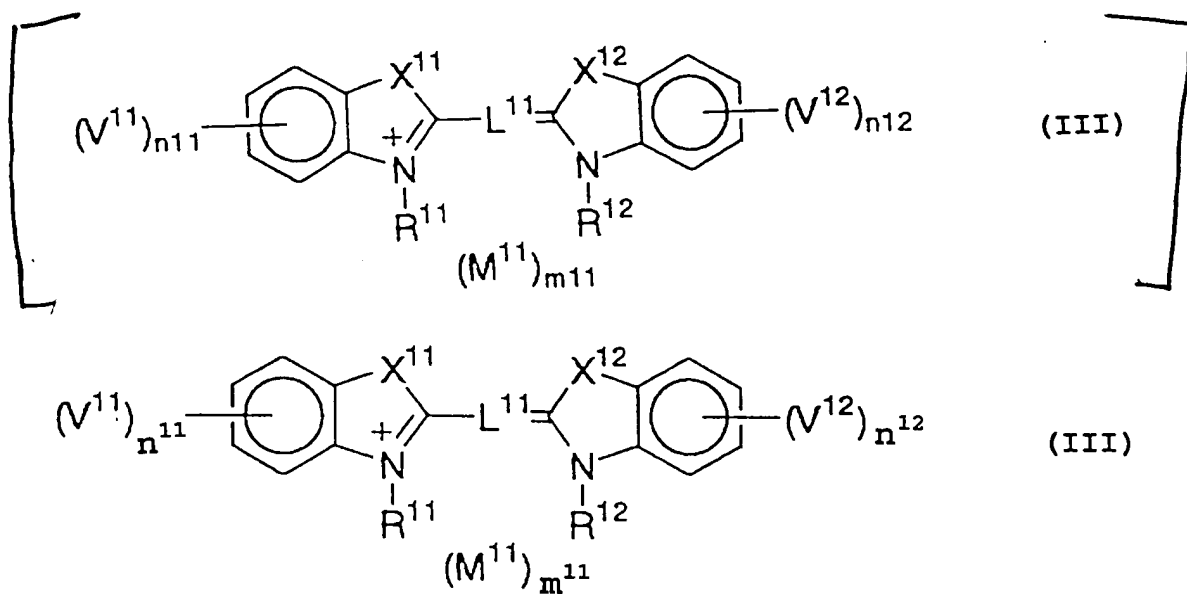
4 (amended). The silver halide photographic emulsion as claimed in claim 1, wherein said sensitizing dyes are represented by the following formula (II):



wherein R<sup>1</sup> and R<sup>2</sup> each represents a substituted alkyl, aryl or heterocyclic group, and R<sup>1</sup> is substituted with -SO<sub>3</sub>H and R<sup>2</sup> is substituted with a dissociable group other than -SO<sub>3</sub>H; Y<sup>1</sup> and Y<sup>2</sup> each represents an atomic group necessary to form a 5- or 6-membered nitrogen-containing heterocyclic ring, and Y<sup>1</sup> and Y<sup>2</sup> may be condensed with other carbocyclic ring or heterocyclic ring; V<sup>1</sup> and V<sup>2</sup> each represents a substituent; n<sup>1</sup> and n<sup>2</sup> each represents an integer of 0 or more, and when n<sup>1</sup> and n<sup>2</sup> each represents 2 or more, V<sup>1</sup> and V<sup>2</sup> may be the same with or different from each other; L<sup>1</sup>, L<sup>2</sup>, L<sup>3</sup>, L<sup>4</sup>, L<sup>5</sup>, L<sup>6</sup> and L<sup>7</sup> each represents a methine group; p<sup>1</sup> represents 0, 1, 2 or 3, p<sup>2</sup> and p<sup>3</sup> each represents 0 or 1, and when p<sup>1</sup> represents 2 or 3, repeating L<sup>2</sup> and L<sup>3</sup> may be the same with or different from each

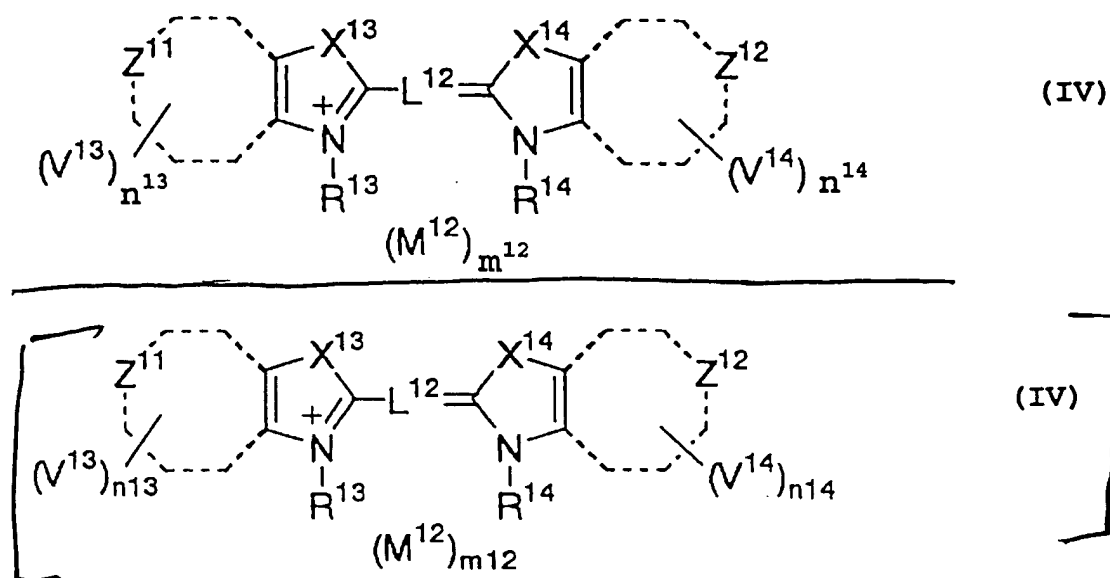
other;  $M^1$  represents a counter ion; and  $m^1$  represents a number of 0 or more necessary to neutralize the electric charge in the molecule.

5 (amended). The silver halide photographic emulsion as claimed in claim 1, wherein at least one sensitizing dye is represented by the following formula (III) and at least one sensitizing dye is represented by formula (IV):



wherein  $R^{11}$  and  $R^{12}$  each represents a substituted alkyl, aryl or heterocyclic group, and  $R^{11}$  is substituted with  $-SO_3H$  and  $R^{12}$  is substituted with a dissociable group other than  $-SO_3H$ ;  $X^{11}$  and  $X^{12}$  each represents an oxygen atom, a sulfur atom, a selenium atom,  $NR^{15}$ ,  $CR^{16}R^{17}$ , or  $L^{13}=L^{14}$ ;  $R^{15}$ ,  $R^{16}$  and  $R^{17}$  each represents a substituted or unsubstituted alkyl, aryl or heterocyclic group;  $L^{13}$  and  $L^{14}$  each represents a methine group;  $V^{11}$  and  $V^{12}$  each represents a substituent;  $n^{11}$  and  $n^{12}$  each represents an integer of 0 or more, and when  $n^{11}$  and  $n^{12}$  each represents 2 or

more,  $V^{11}$  and  $V^{12}$  may be the same with or different from each other;  $L^{11}$  represents a methine group;  $M^{11}$  represents a counter ion; and  $m^{11}$  represents a number of 0 or more necessary to neutralize the electric charge in the molecule;

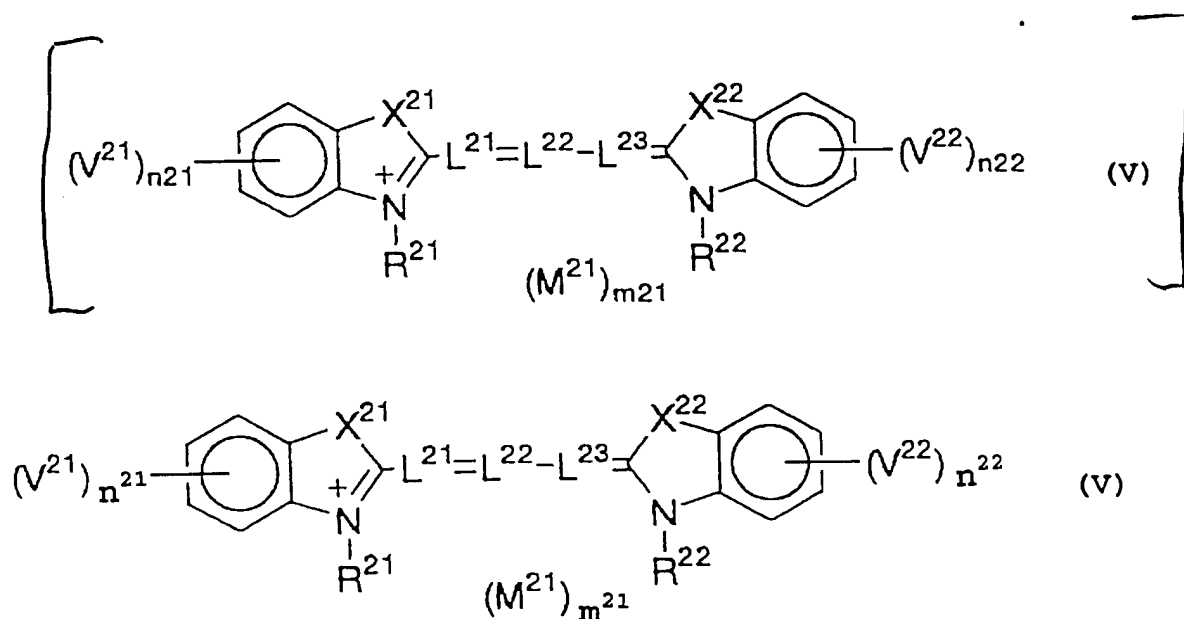


wherein  $R^{13}$  and  $R^{14}$  each represents a substituted alkyl, aryl or heterocyclic group, and at least one of  $R^{13}$  and  $R^{14}$  is substituted with  $-SO_3H$  and the other is substituted with a dissociable group other than  $-SO_3H$ ;  $X^{13}$  and  $X^{14}$  each represents an oxygen atom, a sulfur atom, a selenium atom,  $NR^{18}$ ,  $CR^{19}R^{20}$ , or  $L^{15}=L^{16}$ ;  $R^{18}$ ,  $R^{19}$  and  $R^{20}$  each represents a substituted or unsubstituted alkyl, aryl or heterocyclic group;  $L^{15}$  and  $L^{16}$  each represents a methine group;  $Z^{11}$  represents a benzene ring or a naphthalene ring;  $Z^{12}$  represents a naphthalene ring;  $V^{13}$  and  $V^{14}$  each represents a substituent;  $n^{13}$  and  $n^{14}$  each represents an integer of 0 or more, and when  $n^{13}$  and  $n^{14}$  each represents 2 or more,  $V^{13}$  and  $V^{14}$  may be the same with or



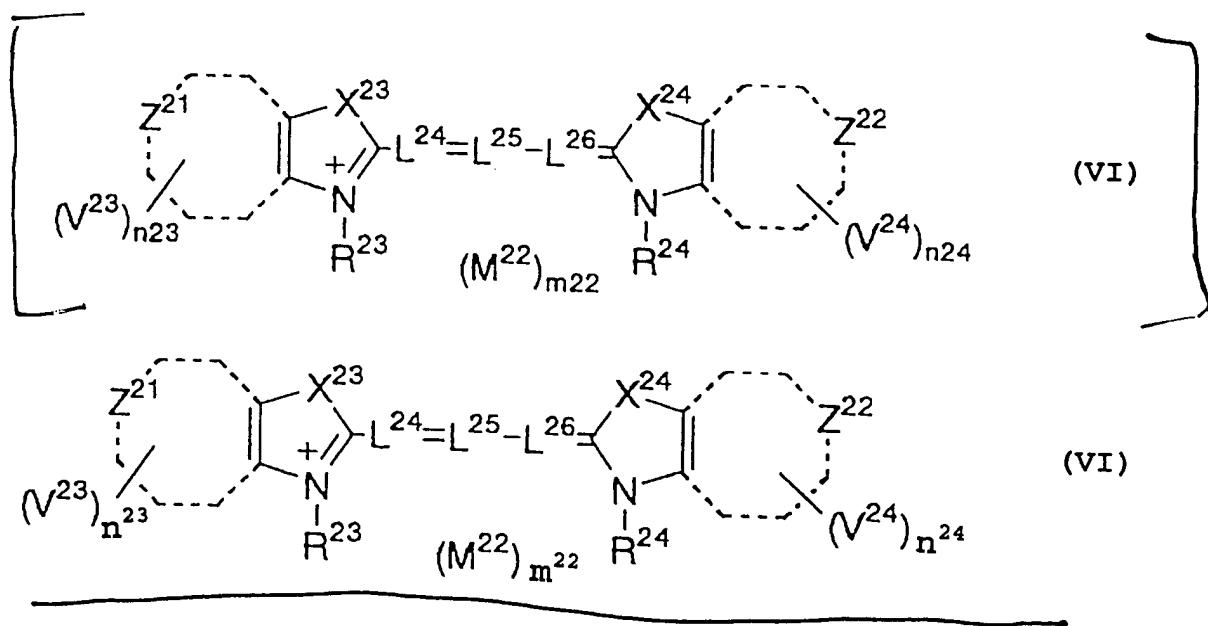
different from each other;  $L^{12}$  represents a methine group;  $M^{12}$  represents a counter ion; and  $m^{12}$  represents a number of 0 or more necessary to neutralize the electric charge in the molecule.

7 (amended). The silver halide photographic emulsion as claimed in claim 1, wherein at least one sensitizing dye is represented by the following formula (V) and at least one sensitizing dye is represented by formula (VI):



wherein  $R^{21}$  and  $R^{22}$  each represents a substituted alkyl, aryl or heterocyclic group, and at least one of  $R^{21}$  and  $R^{22}$  is substituted with  $-SO_3H$  and the other is substituted with a dissociable group other than  $-SO_3H$ ;  $X^{21}$  and  $X^{22}$  each represents an oxygen atom, a sulfur atom, a selenium atom,  $NR^{25}$ ,  $CR^{26}R^{27}$ , or  $L^{27}=L^{28}$ ;  $R^{25}$ ,  $R^{26}$  and  $R^{27}$  each represents a substituted or unsubstituted alkyl, aryl or heterocyclic

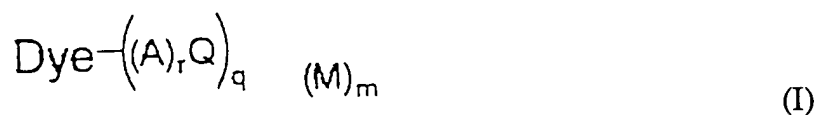
group;  $L^{27}$  and  $L^{28}$  each represents a methine group;  $V^{21}$  and  $V^{22}$  each represents a substituent;  $n^{21}$  and  $n^{22}$  each represents an integer of 0 or more, and when  $n^{21}$  and  $n^{22}$  each represents 2 or more,  $V^{21}$  and  $V^{22}$  may be the same with or different from each other;  $L^{21}$ ,  $L^{22}$  and  $L^{23}$  each represents a methine group;  $M^{21}$  represents a counter ion; and  $m^{21}$  represents a number of 0 or more necessary to neutralize the electric charge in the molecule;



wherein  $R^{23}$  and  $R^{24}$  each represents a substituted alkyl, aryl or heterocyclic group, and at least one of  $R^{23}$  and  $R^{24}$  is substituted with  $-SO_3H$  and the other is substituted with a dissociable group other than  $-SO_3H$ ;  $X^{23}$  and  $X^{24}$  each represents an oxygen atom, a sulfur atom, a selenium atom,  $NR^{28}$ ,  $CR^{29}R^{30}$ , or  $L^{29}=L^{30}$ ;  $R^{28}$ ,  $R^{29}$

and R<sup>30</sup> each represents a substituted or unsubstituted alkyl, aryl or heterocyclic group; L<sup>29</sup> and L<sup>30</sup> each represents a methine group; Z<sup>21</sup> represents a benzene ring or a naphthalene ring; Z<sup>22</sup> represents a naphthalene ring; V<sup>23</sup> and V<sup>24</sup> each represents a substituent; n<sup>23</sup> and n<sup>24</sup> each represents an integer of 0 or more, and when n<sup>23</sup> and n<sup>24</sup> each represents 2 or more, V<sup>23</sup> and V<sup>24</sup> may be the same with or different from each other; L<sup>24</sup>, L<sup>25</sup> and L<sup>26</sup> each represents a methine group; M<sup>22</sup> represents a counter ion; and m<sup>22</sup> represents a number of 0 or more necessary to neutralize the electric charge in the molecule.

11 (amended). A silver halide photographic material which comprises a support having provided thereon at least one emulsion layer containing the silver halide photographic emulsion which contains at least two different sensitizing dyes represented by the following formula (I):



wherein Dye represents a dye moiety; A represents a linking group; Q represents a dissociable group; r represents 0 or 1; q represents an integer of 2 or more, provided that at least one Q represents -SO<sub>3</sub>H and at least one Q represents a dissociable group other than -SO<sub>3</sub>H; M represents a counter ion; and m represents a number of 0 or more necessary to neutralize the electric charge in the molecule, and when m represents 2 or more, M's need not be the same.